**American
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COMPUTER APPLICATIONS FOR YOUNG CHILDREN WHO ARE VISUALLY HANDICAPPED

Responses to Questionnaire

Fall 1989

Computer Applications for Young Children who are Visually Handicapped

Responses to Questionnaire

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Potential for computer applications with infants, toddlers, or multihandicapped visually impaired children

Low vision usage -- movement very reinforcing (Muppets)

Deaf/Blind student -- Muppets' cause/effect very motivating

Respondent has used a computer with a partially sighted, 5-year old kindergarten student.

With the partially sighted children, the potential is the same as for other young children. Screen displays for this age group are usually large enough to be seen by the majority of students.

Respondent has used computers with visually impaired preschoolers.

Respondent has taught a 5-week summer school class of 3 multihandicapped children (ages 3-7). Two of the students have no vision. One student is diagnosed as "cortically blind" and is developing his vision. Two students have additional physical handicaps and are non-ambulatory. One student has a severe behavior disorder. All students experience mental retardation.

Respondent has used Dr. Peet's TalkWriter and some other Public Domain software to introduce computers to infants.

Respondent's son started on the Apple IIe at age 5. He uses an Echo speech synthesizer and a 21" monitor. The computer represents his sole way to write, play games, or create a math paper, since he does not hold a pen. The Echo compensates for his visual impairment. He uses a Koala pad and Unicorn Keyboard.

Respondent has used readiness programs with mildly handicapped preschoolers, but not with very young or very severely handicapped.

Respondent has used computers for teaching colors, shapes, same and different, and other readiness skills. I also use it for language experience stories. The computer is very motivating and children are enthusiastic about using it.

Objectives include development of cause and effect, computer "friendliness."

Respondent has used the computer with multihandicapped VH students. The youngest age was third grade; the oldest was high school. The respondent has gathered up some good large type programs for low vision students and some good Echo and braille programs for blind students. There is great potential for these groups but it is very expensive. Hoping to start Braille Butler system but lack funding for equipment.

Preschoolers and Kindergarten only--using IBM Writing to Read Program (WTR). Like the WTR Program because emphasis is not on speed nor accuracy; makes students less anxious.

Preschoolers--Low Vision

Use computers to increase the size of printed text on the screen/printer and to produce speech feedback for the V.I. students.

Used computers with VI Preschool and Kindergarten; mainstreamed VI elementary.

Respondent has not used a computer with young children because she is a consultant and does not provide direct services. She feels that there is great potential for computer applications with these groups of children.

Computer, peripherals, and/or software used or observed being used with this population.

Apple II, Muppet Keyboard, Sunburst, MECC.

Apple IIe with and without Echo; Patterns and Sequences, Willie Worm Math, & Pig Game.

Apple II, Apple IIe, IIgs. Peripherals: speech synthesis, touch window, muppet keyboard and graphic tablets.

Apple IIgs with Echo Speech Synthesizer, Dr. Peet's Talking Writer (Hautley) Software, Power Pad and Talking Power Pad (Public Domain Software), TSI Versa Point Braille Embosser.

Apple IIe, Echo, Powerpad, AFC, Unicorn Board, switches, color monitor, muppet learning keys. Software: UCLA's fieldtest software, Hartley's Dr. Peet's TalkWriter, PEAL's (action and music exploratory play), R.J. Cooper's switch progression, single switch games, Laureate "Creative" series, and Talking Power Pad (Public Domain)

Apple II, Speech Synthesizer, large monitor, Dr. Peet's TalkWriter, Reader Rabbitt for IIGS (Public Domain).

Respondent has heard Control Data's PLATO is marvelous, but the schools are tied to the Apple. Arizona State School for the Deaf and Blind has talking public domain games. Minnesota and Virginia create their own large print programs.

Apple IIe and Commodore with preschool programs.

Apple IIe, Apple IIgs on large screen monitors, the echo, braille printer, Image Writer II. Software: Dr. Peet's Talking Writer, Muppetville, BEX, Talking Writer, Type-Talk, Magic Slate, Muppet Storywriter, and Explore a Story.

For VI children, use of speech synthesizer is necessary. Simple programs that either speak a letter/message or provide a distinctive sound for each key or adaptive switch closure are appropriate.

Apple IIe, IIc, II+, IBM Laptop, Versabraille, Perky, Echo IIs, IIb, II+, SlotBuster, DP-10, M-Print, screen enlargers. Software: Braille Edit, Edit B1, WordTalk, BrailleTalk, TypeTalk, Talking TextWriter, Dr. Peet's, Magic Slate, Kidsword, MultiScribe, BankStreet III, and many other programs.

IBM and Apple.

Apple Computer--Switches; Public Domain Software (Sparkee, Noises, Fireworks, Blocks and Wheelchairs; Scanning game, Clowns, Balls, Frogs).

Used hardware such as: a) Apple, Macintosh, and IBM Computer; b) large screen monitors, Braille embossers and graphic printers; c) Echo IIb/Commander; and d) IIgs Adaptive Firmware Card. Used software such as Kids Words, Tall Talk Screens and Print, Magic Slate 20 col., BEX and ProWords.

Apple IIe, IIgs w/Braille overlay; Echo, ProWords software; ProTerm Communications software; Power Pad w/Tactile selection; Magic Slate 20, Muppet Slate; Ohtsuki printer.

Apple 2Es, Apple GS, Power Pads, Touch Window, Echo Cards

Activities and concepts taught via computer and skills, activities, and concepts that should be taught/reinforced using computers.

Cause/Effect--Discovery on Muppet Keyboard is excellent; has sounds, movement, and color change. Counting--with good search pattern left to right, top to bottom. Listening skills--Muppet Numbers makes noise as things appear on the screen.

Matching skills, math-addition; using numerals 1-3; following directions; looking for details; and scanning left to right.

Identification of shapes and letters, receptive vocabulary, sequencing, classification.

Alphabet and numbers; learning keyboard skills and word processing, shapes.

Cause/effect; reinforcement of "head up," standing/weight bearing, turn-taking, imitation (language).

Student interaction, cause/effect, alphabet, keyboard recognition.

Math concepts--place value, fractions, graphs, carrying and borrowing, decimals, rounding, estimating, relative value. Spatial, Perceptual--measurement, weight, various perspectives from which to see and object, music-creating songs, Simon, games. Creativity--"Dinosaur Days" allows kids to create their own dinosaur; Sunburst has a monster-making program; Logic's "King's Rule" is excellent.

None for this population.

1) Keyboard skills -- use Type Talk, Talking Writer, and Dr. Peet's. 2) Alphabet recognition --use Dr. Peet's; 3) Concept development and same/different -- use Muppetville and Explore a Story; 4) Listening skills -- use Muppetville; 5) Memory skills --- use Muppetville, and Explore a Story; 6) Language experience -- use BEX, Magic Slate, Explore a Story, Muppet Story Writer; and 7) Counting Skills -- Muppetville, Explore a Story. Respondent would like to have more software on positional concepts and description concepts--large, small, tall, short, etc.

The Muppet Keyboard has proved useful; the discovery program with music is very motivating [especially to a 2-year-old blind girl with normal or above intelligence.] Language readiness--Talking Keyboard--either/or letters and "A is for apple" phrases.

Keyboard and typing skills. Also teach students various word processing programs until they find one they like. Do some map skills, spelling, math, social studies and puzzles and games. The student retains the information and remains motivated longer on a computer.

Positioning, increasing gaze and tracking alphabets, numbers and concepts, spatial awareness activities.

Vision Stimulation for MH; Alphabet--Public Domain; Concept Development--Public Domain.

The most improtant consideration with using the computer is the teaching of keyboarding skills to the visually impaired population. At the present time this is the only economically available input method. For the muldtihandicapped we have taught keyboarding through the use of A.F.C./Switches and talking large-print scanning arrays. V.I. students have also used the computer as an application tool creating documents using talking AppleWorks. In the future we hope to get students using the computer as an information gathering tool through on-line services.

Keyboarding first. Encourage its use from 1st grade on.

Cause and effect, turn-taking, problem-solving, tracking, visual and auditory awareness, letter identification.

Software that has proved to be of interest and motivational to students and age, functional level, and visual/auditory ability of students.

Age: 4-10 years; functional level: 3-6 years; auditorially moderate loss to O.K.

Acuity of student about 20/100. Normal IQ, but was slow with visual tasks; will be in first grade now.

Five-six students who are partially sighted and are in the moderate to normal IQ range.

Dr. Peet's Talking Writer--age 4 and up, low vision and blind, good auditory ability; Magic Slate, 20 column, age 6 and up, low vision.

Three to 8-years old large print readers.

Dr. Peet's (ages 5-8) by Hartley--needs vision, talks; Fish Scales--needs vision, needs to talk; Motor Training Games by Palk Swedja (Adaptive Peripherals); Beagle Bag will talk very well; Cat N' Mouse; Muppet Keyboard if it could be overlaid with Braille; most Sunburst software is good; MECC is good, but not polished.

For the totally blind, 5-6 year old, normal functioning level child: Muppetville--apartments; BEX- language experience, journal writing, Talking Writer--a typing game, Lorin's software--for tactile graphics -- shapes, letters, and coloring sheets, Dr. Peet's. For 4-year-old, low vision, normal hearing, normal functioning child: Explore a Story, Muppetville, Muppet Storywriter, Magic Slate, Talking Writer--typing game after some keyboard skills, and Dr. Peet's.

All of it has been of interest and/or motivation to one or more students...try to fit the software to the student and his/her needs.

IBM Writing to Read; IBM Touch Typing for Beginners; Listen to Learn; Bouncy Bee Learns Letters.

Minnesota Educational Computing Consortium.

Talking Appleworks--Junior/Senior High Level --Partially Sighted

Early Games; Muppet Slate; Magic Slate; Early Learning w/Overlaps for Power Pad>for elementary EMH to Average.

Observed 3-5 year old, low vision students with normal hearing using software.

Views regarding the importance of computers to young visually impaired children and applications for children who have residual vision and for those who do not.

Respondent does not use computers with other preschool VI except the student with partial vision. The use of computer tasks was used for reinforcement of work, with other pencil, paper tasks,writing, cutting, etc. Worked very well.

The use of a computer for young visually impaired children with little or no vision is not practical. There are no programs designed for this population. I do not begin a child until he is starting to read and has learned his letters and how to spell his name. The keyboard is then introduced.

Respondent feels it is very important for VI children to use the computer at an early age since it will become an important communication tool in the child's future. As soon as possible the VI child needs to learn keyboarding and word processing.

Computers are a valuable teaching tool for the VI severely handicapped population. They are especially good to use for motivation to engage in other activities such as motor tasks. For students with residual vision, the computer seems to be appropriate for teaching visual efficiency. Developing vision is also facilitated by the use of a stimulating visual program.

Very important to start as young as possible with all. Everyone should be exposed (with proper adaptations) regardless of acuity.

Very important for both blind and impaired. The key is voice synthesis. The need is to continue to miniturize and bring down the cost of the Kurzweil. Make the computer have a personality.

I think all students can benefit from computer instruction. It is a highly motivating medium and will enable them to develop skills necessary for mainstream instruction for children with residual vision; it provides large and colorful pictures that motivate. For totally blind children it is especially essential to get them familiar with the computer and Echo, so they can type out work soon as possible. The braille printer provides the opportunity to have the child realize that braille is a form of reading and makes it more acceptable at an earlier age--much like a sighted child who looks at books and print all around them.

Respondent is for computer for the VH student regardless of their vision problem.

Very important to teaching eye-hand coordination, and other psychomotor control skills. Low vision activities are also possible, using large print display screens. Auditory stimulation is possible with voice activators--very helpful, too.

Accessibility is an issue. High motivation for good performance. Has long range (future life) implications for the child. Those with vision need speech synthesized programs.

I have mixed emotions with the use of computers and the very young V.I. child. I feel that these students need more sensory stimulation through the use of manipulatives. I might be more inclined to use the computer with programs that have toys and/or manipulatives connected to the computers as output. Such as, adapting Point-to-Pictures by R. J. Cooper for tactile use.

Computers can open up new education opportunities to students with visual impairments. Special software and adaptive equipment can provide access and rich experiences for these people.

I feel that the use of computers with young VI children is very important. (They should not be used to replace teacher-student or peer interaction, or as a means of self-stimulation. For those young children who do not have residual vision, I think it would be much harder to determine meaningful applications for computers (especially with multihandicapped students.) These children usually need concrete experiences with people and objects.

Future projections (i.e., in five years and in 10 years) of computer need/use with young visually impaired students, birth through six years.

Important to compete with regular sighted peers.

Respondent does not have access to computers for multihandicapped students in her rural program, but could see various beneficial applications; as of now her district has no other VI preschoolers.

Mainly we are looking to get computers into the classrooms and train the staff to use them.

We would like more computers so that each child will have adequate access. Braille printers for each student who is learning to read braille.

Greater and greater use is being made of computer applications with students who are visually impaired. More programs will need to be developed to reach those students with severe multiple handicaps. In the preschool years, the focus should be on familiarizing the student with the computer and making it enjoyable. Later on, the student will be able to do more specific school-related tasks on the computer. We will need to make more advances in assuring that equipment is affordable and available.

Who knows? You will most likely be able talk into a computer and have the material go anywhere and do anything. Computers will also be able to read anything to anyone in any voice and language.

A portable computer with satisfying tactile and an audible click of the keys is needed, as is a cheaper, smaller talking calculator. A program is needed with a figure and personality to introduce children to computer Monopoly, Clue, and Chess and play with them.

Vocational goals should be considered here. To be able to compete successfully, use of a computer will be mandatory in the workplace when they grow up.

Hope that state and national organizations would get their acts together and start networking information and materials among all the VH programs and organizations. Technology is here! Why can't we start sending braille materials by modem (electronic mail) or floppy disks?

Continue with IBM Writing to Read; Work with IBM to improve WTR series so that it is more useful to blind/visually impaired users.

Need will quadruple in 10 years. No VH child will have one--should have one in his classroom by 3rd grade. Assignments will be done via computer.

Tactile (Relief) Computer Windows--similar to the touch window in which raised dots appear for the text or graphics; Economically available speech recognition systems; Economically available optical scanning systems for the production of tactile graphics.

Costs will decrease, variety and availability of software will increase, training and experience of use of computers will increase. I think use of computers for communication by multihandicapped students will increase.

Observation of computer applications with young visually impaired children who have additional handicapping conditions.

If poor, fine motor skills are assisted by the Koala pad of some type or something requiring very little pressure (biggest problem).

None

Adaptations such as "touch windows" have allowed access to many students. Students with severe hearing problems will have difficulty since they cannot hear prompts.

Children with auditory problems have difficulty with the Echo and may benefit from use of headset. Children with CP or very poor motor control will need a keyguard attached to the keyboard. The Power Pad with Echo speech output is a very versatile tool for all, especially for those with mental limitations.

Extremely motivating to students.

With proper software and adaptations, no difference. Ability level of individual is only determing factor.

It is thrilling for all children. It is necessary for blind children. Best programs are those which are self explaining and easy to start.

As long as we have sound, all things are possible.

There are many adaptive devices that can be used with young and multihandicapped students. It sometimes takes longer for them to learn the process but usually it is worth the time and effort.

Apple computers in conjunction with communication boards.

Cause and effect programs with multihandicapped children; Very important tool for learning for physically involved students--especially for communication.

Extremely limited use of computers by classroom teachers because of the lack of teacher training courses in this area. Teachers basically use the computer for sensory cause-effect and means-ends exploration.

I have witnessed only VI EMH students who have benefitted brom computer use; the one VI gifted student literally challenged the companies, for he required a fast-paced, large-print experience. The other children I've seen are only VI, and they use the technology at least one hour a day.

The student I observed was very motivated by the colors, sound effects, and his ability to make things happen on the screen.

Programs and Teachers who could serve APH as a resource in working with early childhood level visually impaired children and computers.

Mrs. Karen Frank

Ms. Margaret Reitz

Becky Powers and Sharon Howell who are teaching at West Pensacola Elementary School in Escambia Co. School District Pensacola, FL; are two teachers working with VI young children on computers.

The Communicator Publishers, Inc., Rt. 4 Box 263, Hillsville, VA 24343-8047

Dick Upton, AZ School for the Deaf/Blind, 602/628-5564--Talking games

DCCG- Disabled Children's Computer Group in Cerritos, CA. See Apple Computer; also branch in Santa Monica

Edye Sloane, Florida Educ. Handicapped

Closing the Gap, Delores Hagen, Minneapolis

Marge Quacken Bush, parent, Palo Alto, CA, 415/328-2545

Jim Forderer, parent, National Special Education Alliance, 100 View St., Suite 108, Mountain View, CA 94041, 415/961-6789

R. J. Cooper, consultant, 714/240-1919

Kim Lindlley, VH Teacher, Castille School, Puerta de Luz, Mission Viejo, CA, 714/830-3710

There are many in Denver and Colorado

Irene Casey, 2nd-3rd Grade Teacher

Marcia Kelly, Coordinator of Preschool Services.

Mary Alice Lamb, Low Vision Specialist

Renee Snipes, Orientation & Mobility instructor for early childhood and elementary programs.

PEIP--Val Vickarelli, Deb Nelson; Dist.6 Visually Impaired Program (same teachers)

FIMC/VH, Tampa--Ellen York; Hillsborough County, Tampa--Maria Melendez, VI Teacher; Margarita Ojeda, VI Teacher; Alicia Torres, VI Teacher; Mary "Jackie" McCuller, VI Teacher.

Jim Allen with the Texas School for the Blind

Lynn Sullivan (Early Childhood Consultant--Not VH); Region XI Education Service Center, Fort Worth, Texas.

Christine Hess (Consultant for Studnets with Severe/Profound Hanidcaps) Region IV Education Service Center, Houston, TX.

General Comments/Observations

I would be interested in the response to #8, as I am not aware of any other local or national resources. (Margaret Bateman)

We are just beginning to use computers as an instructional tool. I'm definitely interested in any information that is available in the use of computers for all visually handicapped students. (Jane French)

The earlier children begin with computers the better. All children need to be familiar with the computer and its use.

I would like to know outcomes of this survey, particularly software ideas others are using or have found useful.

I am very interested in the production of Braille and Tactile graphic materials using Optical Scanning and Recognition methods.

I think more information and training is needed by teachers. I appreciate you doing this survey and look forward to the results and information that will be generated as a result of your work.